

100160-67 YEP(m)/LMP(L)/ETI IJP(c) JD/HW
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SOURCE CODE: UR/0048/66/030/006/1035-1037

AUTHOR: Kirenskiy, L.V.; Sukhanova, R.V.; Kan, S.V.; Pyn'ko, V.G.; Sivkov, N. I.

ORG: Institute of Physics, Siberian Section, Academy of Sciences, SSSR (Institut fiziki Sibirskogo otdeleniya Akademii nauk SSSR); Krasnoyarsk Pedagogic Institute (Krasnoyarskiy pedagogicheskiy institut)

TIME: Fine magnetic structure of the domains in iron-nickel films /Report, All-Union Conference on the Physics of Ferro- and Antiferromagnetism held 2-7 July 1965 in Sverdlovsk/

SOURCE: AN SSSR. Izvestiya. Seriya fizicheskaya, v. 30, no. 6, 1966, 1035-1037

TOPIC TAGS: permalloy, magnetic thin film, magnetic structure, magnetic domain structure, METAL FILM

ABSTRACT: The authors have employed an electron microscope to investigate the fine magnetic structure of the domains (magnetization ripples) in films of nickel-iron alloy vacuum deposited at 10^{-4} mm Hg onto rock salt substrates. A series of films containing 80% Ni (in the initial mix) were deposited on substrates maintained during deposition at different temperatures between 50 and 200° C, and a second series of films containing from 40 to 90% Ni were deposited on substrates maintained at 100° C. Fine magnetic structure and magnetization ripples were observed in both series of films. In the 80% Ni film deposited at 160° the crystallite size was 590 \AA , the wavelength of

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REF ID: A6029128
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SOURCE CODE: UR/0048/66/030/006/1038/1041

AUTHOR: Kipenskiy, L.V.; Gubshanova, R.V.; Kan, S.V.; Pyn'ko, V.G.; Komalov, A.S.

ORG: Institute of Physics, Siberian Section, Academy of Sciences, SSSR (Institut fiziki Sibirskogo otdeleniya Akademii nauk SSSR); Krasnoyarsk Pedagogic Institute (Krasnoyarskiy pedagogicheskiy institut)

TITLE: Fine magnetic structure of the domains in iron, nickel, and cobalt films
Report, All-Union Conference on the Physics of Ferro- and Antiferromagnetism held
2-7 July 1966 in Sverdlovsk

SOURCE: AN SSSR. Izvestiya. Seriya fizicheskaya, v. 30, no. 6, 1966, 1038-1041

TOPIC TAGS: magnetic thin film, iron, cobalt, nickel, magnetic structure, magnetic domain structure, magnetic coercive force, METAL FILM

ABSTRACT: The authors have investigated the fine magnetic structure of the domains (magnetization ripples) of iron, nickel, and cobalt films vacuum deposited at 10^{-4} mm Hg onto rock salt substrates maintained during deposition at temperatures between 30 and 250° C. Films were obtained whose crystallites had average linear dimensions ranging from 110 to 1200 Å, and the transition from polycrystalline to single-crystal structure was observed. Unlike the single-crystal films, the polycrystalline films always exhibited fine magnetic structure of the domains. Linear relations were found

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47

L 09128-67 EWT(m)/EWP(t)/ETI IJP(c) JD/HW
ACC NR: AP6032617 SOURCE CODE: UR/0126/66/022/003/0380/0391
AUTHOR: Kirenskiy, L. V.; Pyn'ko, V. G.; Sukhanova, R. V.; Sivkov, N. I.; Pyn'ko, G. F.; Edel'man, I. S.; Komalov, A. S.; Kan, S. V.; Syrova, N. I.; Zvegintsev, A. G.
ORG: Institute of Physics SO AN SSSR (Institut fiziki SO AN SSSR); Krasnoyarsk Pedagogical Institute (Krasnoyarskiy pedinstitut)
TITLE: Epitaxial films of iron, nickel and cobalt [report presented at the Conference on Physics of Ferro- and Antiferromagnetism, Sverdlovsk, 5-7 July 1965]
SOURCE: Fizika metallov i metallovedeniye, v. 22, no. 3, 1966, 380-391
TOPIC TAGS: magnetic anisotropy, epitaxial growing, hysteresis loop, metal film
ABSTRACT: The authors study the epitaxial growth of iron, nickel and cobalt films thermally vaporized onto ionic crystals split in air and in a vacuum. It is shown that when the substrates are heated in a vacuum of 10^{-4} mm Hg, the surface state is changed with a favorable effect on epitaxy. The phase composition of the film may be controlled by proper selection of the substrate. The fields of anisotropy of the films are measured and the effect which application of a magnetic field during vaporization has on the magnetic anisotropy of the films is studied. The domain structure of the films and its dynamics are analyzed and the results are used as a basis for explaining the shape of hysteresis loops. The coercive force is measured in films of various thickness. It is shown that the coercive force of the films is always much less than the field of anisotropy and is approximately inversely proportional to the saturation magnetization. Orig. art. has: 13 figures, 1 table, 5 formulas.
SUB CODE: 11, 20/ SUBM DATE: 30Jul65/ ORIG REF: 004/ OTH REF: 007
Card 1/1 nat UDC: 539.216.25:538.221

MELIKHAR, F. [Melichar, F.]; TUY, D.; KAN, V.

Diagnostic significance of the determination of transaminase activity in the blood serum of patients with epidemic hepatitis. Sov. med. 28 no.4:72-75 Ap '64.

(MIRA 17:12)

1. 2-ya terapevticheskaya klinika, Brno, i Bol'nitsa im. V'yetnamo-chekhoslovatskoy druzhby, Demokraticeskaya Respublika V'yetnam, Gayfong.

VAYNER, Yakov Vul'fovich; DASOYAN, Martin Avetisovich; YAMPOL'SKIY, A.M.,
inzh., retsenzent; KAN, V.I., inzh., retsenzent; AGUF, I.A.,
inzh., red.; VARKOVETSKAYA, A.I., red. izd-va; CHFAS, M.A., red.
izd-va; PETERSON, M.M., tekhn. red.

[Equipment, automation and mechanization in electrochemical coat-
ing shops] Oborudovanie, avtomatizatsiya i mekhnizatsiya tsekhov
elektrokhimicheskikh pokrytii. Moskva, Mashgiz, 1961. 404 p.
(MIRA 14:10)

(Electroplating)

VAYNER, Ya.V.; DASOYAN, M.A.; YAMPOL'SKIY, A.M., kand. tekhn.nauk,
retsenzent; KAN, V.I., inzh., retsenzent; LYZLOV, Yu.V., kand.
khim. nauk, red.; VARKOVETSKAYA, A.I., red.izd-va; PETERSON,
M.M., tekhn. red.

[Technology of electrochemical coatings] Tekhnologiya elektro-
khimicheskikh pokrytii. Moskva, Mashgiz, 1962. 468 p.
(MIRA 15:12)

(Electroplating)

KAN, V. L.

PA 64T50

USSR/Electronics
Condensers
Mathematics, Applied

Apr 1948

"Accurate Solution of the Langmuir Problem for a Spherical Condenser," V. L. Kan, Leningrad Polytech Inst imeni M. I. Kalinin, 12 pp

"Zhur Tekh Fiz" Vol XVIII, No 4 - pp 483-94

Comments on solution to Langmuir's problem on the distribution of potential in spherical condenser where the current is limited by large discharge. Accurate solution, using Bessel's function, for boundary cases and description of the operations for derivation of formulas. Shows possibilities for generalizations. Submitted 6 Nov 1947. 64T50

KAN, V. L.

Behavior of the electron spin in scattering. V. Kan. Doklady Akad. Nauk S.S.S.R. 50. 139-42(1948).--The different cross-sections for scattering of an electron with given spin by a point charge, and by a scatterer with charge and magnetic moment are developed with Born's approximation. Terms contg. products of the charge and magnetic moment components in the 2nd case appear noteworthy. F. H. Murray

KEL'ZON, Anatoliy Saulovich; KAN, V.L., nauchnyy red.; POLYAKOV, I.I.,
red.; ERASTOVA, N.V., tekhn.red.

[Dynamic tasks of cybernetics] Dinamicheskie zadachi kibernetiki.
Leningrad, Gos.soiuznoe izd-vo sudostroitel.promyshl., 1959. 294 p.
(MIRA 12:8)

(Cybernetics)

BRODSKIY, A.D.: KAN, V.L.

Increasing the sensitivity of Rayleigh disks. Izv.tekh. 20 no.1:
56-57 Ja '59. (MIRA 11:12)

(Sound--Measurement)

BRODSKIY, A.D.; KAN, Y.L.; PYATIGORSKIY, L.M., nauchnyy red.;
KUZNETSOVA, M.I., red. izd-va; KASHIRIN, A.G., tekhn.
red.

[Brief manual on mathematical processing of measurement
results] Kratkii spravochnik po matematicheskoi obrabotke
rezul'tatov izmerenii. Moskva, Gos. izd-vo standartov,
1960. 167 p. (MIRA 14:5)

1. Vsesoyuznyy nauchno-issledovatel'skiy institut metro-
logii im. D.I. Mandele'yeva (for Brodskiy, Kan)
(Probabilities)

3.3000

43(+)

AUTHORS:

Kan, V. L., Kel'zon, A. S.

67883

S/020/60/130/06/012/059
B013/B007

TITLE:

The Stable and Unstable Trajectories of Proportional Navigation

PERIODICAL:

Doklady Akademii nauk SSSR, 1960, Vol 130, Nr 6, pp 1220 - 1223 (USSR)

ABSTRACT:

The authors investigate the proportional navigation for arbitrary integral values of the navigation constant. The differential equations of the ideal motion of an axially symmetric object in the horizontal plane read: $m\ddot{\psi} = (T + c_L v^2)\alpha$; $I_z \ddot{\varphi} = -k_1(v)\beta - k_2(v)\dot{\varphi} + k_3(v)\alpha$; $\varphi = \eta - 90^\circ + \alpha - \gamma$; $\psi + \gamma = \eta$; $\dot{\eta} = b\dot{\eta}$; $\dot{\alpha} = v_s \cos \eta - v \cos \gamma$; $\dot{\eta} = v \sin \gamma - v_s \sin \eta$. From the system of the last four equations one obtains a closed solution for arbitrary integral values of the navigation constant. This system is then represented in the form $\dot{\alpha} = v_s [\cos \eta - p \cos(b-1)(\eta - \epsilon_0)] = v_s F(\eta)$; $\dot{\eta} = -v_s [\sin \eta + p \sin(b-1)(\eta - \epsilon_0)] = -v_s f(\eta)$.

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where $p = v/v_s$; $\varepsilon_0 = (b\eta_0 - \psi_0)/(b - 1)$ hold. The subscript o denotes the initial values of the variables. By integration of the latter system of equations for $b = 4$ one obtains the trajectory equation

$$\frac{a}{a_0} \left[\frac{p \sin 3(\eta - \varepsilon_0) + \sin \eta}{p \sin 3(\eta_0 - \varepsilon_0) + \sin \eta_0} \right]^{1/3} \prod_{i=1}^3 \left| \frac{\operatorname{tg}(\eta - \varepsilon_0) - \operatorname{tg}(\eta_i - \varepsilon_0)}{\operatorname{tg}(\eta_0 - \varepsilon_0) - \operatorname{tg}(\eta_i - \varepsilon_0)} \right|^{-\frac{4}{3} A \frac{\sin \varepsilon_0}{p - \cos \varepsilon_0}},$$

where B_i , in turn, is again a rather complex function. This trajectory equation may be simplified for special values of ε_0 . The exact solution for various integral values of the navigation constant may be divided into two cases: odd b and even b . A formula is written down also for the curvature of the trajectory. The authors then investigate the behavior of the object near the target for the case in which the object moves more rapidly than the target. In such a case the stable and unstable roots alternate. To the stable and unstable roots there correspond an approach and a withdrawal from the target.

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The Stable and Unstable Trajectories of Proportional Navigation
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respectively. The authors then deal with the motion of the object near the stable roots. In the corresponding expansions into series only the first terms are in each case retained. With $b \geq 2n$ an interception (perekhvat) is possible with an arbitrary ratio of the velocities p , arbitrary initial conditions, and from an arbitrary direction. With $b < 2n$, the limit of stability may be determined for the corresponding variables. In a similar manner also a real motion may be investigated, and it is further possible to select the amplification coefficients in the system of automatic control of the motion. There are 4 figures and 4 references, 2 of which are Soviet.

ASSOCIATION: Leningradskoye vyssheye inzhenernoye morskoye uchilishche im. admiraln Makarova (Leningrad Higher School of Naval Engineers imeni Admiral Makarov)

PRESENTED: July 9, 1959, by V. I. Smirnov, Academician
SUBMITTED: July 7, 1959

Card 3/3

13.2000

34763
S/140/62/000/001/004/011
C111/C444

AUTHORS:

Kan, V. L., Kel'zon, A. S.

TITLE:

On strict solutions of the equations of proportional navigation

PERIODICAL:

Izvestiya vysshikh uchebnykh zavedeniy. Matematika, no. 1, 1962, 50-56

TEXT: The differential equations of proportional navigation were integrated by Spitz (Ref. 1: Partial navigation courses for a guided missile attacking a constant velocity target. Naval Research Laboratory, USA 1946) for the navigation constant $b = 2$.

The authors write these equations in the form

$$\dot{a} = v_s [\cos \eta - p \cos (b-1)(\eta - \xi_0)] \equiv v_s f(\eta) \quad (1.6)$$

$$a \dot{\eta} = -v_s [\sin \eta + p \sin (b-1)(\eta - \xi_0)] \equiv -v_s f(\eta) \quad (1.7)$$

and integrate them for arbitrary integers b . Here a is the distance of the target A from the object B, η is the inclination angle of \overline{BA} ; ψ is the inclination angle of the velocity v of B, where $|v| = \text{const}$;

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$\gamma = \eta - \psi$; v_s is the velocity of A, constant with respect to the amount and to the direction (it forms the angle η with \overline{BA}); $p = \frac{v}{v_s}$; ϵ_0 is defined by

$$\epsilon_0(b-1) = b\eta_0 - \psi_0 \quad (1.5)$$

where η_0, ψ_0 are the initial values of the variables. One investigates the case $p > 1$. First of all it is stated that the equation

$$f(\eta) = \sin \eta + p \sin(b-1)(\eta - \epsilon_0) = 0 \quad (1.8)$$

has exactly $2(b-1)$ zeros on $0 \leq \eta \leq 2\pi$ points. A zero is called stable if neighbored η converge to it with increasing time. It is proved that to stable zeros there corresponds an approximation ($\dot{a} < 0$) and to the instabil ones there corresponds a divergence ($\dot{a} > 0$).

The integration of the system is done by the following scheme. (1.6)
is divided by (1.7), after integration of the quotients one obtains

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$$\ln \frac{a}{a_0} = \frac{1}{b-1} \ln \frac{\rho \sin(b-1)(\eta - \eta_0) + \sin \eta}{\rho \sin(b-1)(\eta_0 - \eta_0) + \sin \eta_0} - \frac{b}{b-1} \int_{\eta_0}^{\eta} \frac{\cos \eta \cdot d\eta}{\rho \sin(b-1)(\eta - \eta_0) + \sin \eta}. \quad (2.2)$$

The remaining integral is integrated for $b = 3$ with the substitution

$$\operatorname{tg} \frac{\eta - \xi_0}{2} = z, \quad \operatorname{tg} \frac{\eta_0 - \xi_0}{2} = z_0 \quad (2.4)$$

and for $b = 4$ with the substitution

$$z = \operatorname{tg}(\eta - \xi_0), \quad z_0 = \operatorname{tg}(\eta_0 - \xi_0). \quad (2.18)$$

For $b = 3$ one obtains

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$$\frac{a}{a_0} = \left[\frac{p \sin 2(\eta - \varepsilon_0) + \sin \eta}{p \sin 2(\eta_0 - \varepsilon_0) + \sin \eta_0} \right]^{1/2} \prod_{l=1}^4 \left| \frac{\operatorname{tg} \frac{\eta - \eta_0}{2} - \operatorname{tg} \frac{\eta_l - \varepsilon_0}{2}}{\operatorname{tg} \frac{\eta_0 - \varepsilon_0}{2} - \operatorname{tg} \frac{\eta_l - \varepsilon_0}{2}} \right|^{-2B_l \operatorname{ctg} \varepsilon_0}, \quad (2.11)$$

where

$$B_i = \frac{\cos \eta_i \cdot \sec^2 \frac{\eta_i - \varepsilon_0}{2}}{2[2p \cos 2(\eta_i - \varepsilon_0) + \cos \eta_i]}, \quad (2.12)$$

For arbitrary odd $b = 2m+1$ one uses again (2.4) as well as the representation

$$\sin 2m(\eta - \varepsilon_0) \cdot \sec^{4m} \frac{\eta - \varepsilon_0}{2} = Q_{4m-1} \left(\operatorname{tg} \frac{\eta - \varepsilon_0}{2} \right) \quad (2.27)$$

where Q_{4m-1} is a polynomial of $(4m-1)$ -th degree. Then the integral attains the form

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$$I = \int_{z_0}^z \frac{2[\cos \epsilon_0(1-z^2) - \sin \epsilon_0 2z](1+z^2)^{2m-2}}{pQ_{4m-1}(z)(1-z^2)(1+z^2)^{2m-1} \sin \epsilon_0 + 2z(1+z^2)^{2m-1} \cos \epsilon_0} dz \quad (2.29)$$

and is integrated by aid of decomposition into partial fractions (as in the case of $b = 3$). If $b = 2m + 2$, then (2.18) and

$$\frac{\sin n \varphi}{\cos^n \varphi} = Q_n(\operatorname{tg} \varphi) \quad (2.31)$$


is used.

At the end it is stated that the curve is always convex with respect to the straight line which connects object and target.

There are 2 Soviet-bloc and 2 non-Soviet-bloc references. The two references to English language publications read as follows:

Card 5/6

On strict solutions of the equations ... S/140/62/000/001/004/011
C111/C444
H. Spitz: Partial navigation courses for a guided missile attacking
a constant velocity target. Naval Research Laboratory, USA, 1946;
A. Locke: Guidance, New York, 1955.
SUBMITTED: May 4, 1959



Card 6/6

FRAZHNICHENKO, Nikolay Arsen'yevich; KAN, Veniamin-Lipmanovich;
MINTSBERG, Benjamin L'vovich; MOROZOV, Valentin Ivanovich;
BUTENIN, N.V., doktor tekhn. nauk, prof., retsenzent;
NIKITIN, N.N., kand. fiz.-mat. nauk, retsenzent; ZAKHAREVICH,
A.F., nauchnyy red.; SMIRNOV, Yu.I., red.; TSAL, R.K., tekhn.
red.

[Problems on theoretical mechanics] Sbornik zadach po teoreti-
cheskoi mekhanike. Leningrad, Sudpromgiz, 1962. 559 p.

(MIRA 16:1)

(Mechanics, Analytic--Problems, exercises, etc.)

KAN, V. L.

Evaluating errors of compound instruments (sets). Trudy inst.
Kom. stand. mer i izm. prib. no.57:7-9 '62.
(MIRA 15:10)

1. Vsesoyuznyy nauchno-issledovatel'skiy institut metrologii
im. D. I. Mendeleeva.

(Measuring instruments)

KAN, V.L.; KEL'ZON, A.S. (Leningrad)

"Some new problems of proportional navigation"

report presented at the 2nd All-Union Congress on Theoretical
and Applied Mechanics, Moscow, 29 Jan - 5 Feb 64.

L 3078-66 EWT(d)/EWP(v)/EWP(k)/EWP(h)/EWP(l)
AM5026186 BOOK EXPLOITATION

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656.6

56
B+1

Kan, Veniamin Ilymanovich; Kel'son, Anatoliy Saulovich

Theory of proportional navigation (Teoriya proporsional'noy navigatsii)
Leningrad, Izd-vo "Sudostroyeniye", 1965. 423 p. illus., biblio. 1,800
copies printed.

TOPIC TAGS: automatic control theory, navigation system, proportional navigation,
trajectory determination, aerospace structure, motion mechanics, motion stability,
solid kinematics

PURPOSE AND COVERAGE: This book is a study of the symmetrical motion of the
relatively linear axis of a solid body converging with a moving point by means
of proportional convergence. The book presents the theory of proportional
navigation in its present state based on data of Soviet and foreign science
as well as on studies made by the authors. Problems of kinematics, dynamics,
stability of motion and of automatic control by proportional convergence are
viewed. The book is recommended for engineers and scientists specializing in
the field of automatic control of motion. Also it would be useful for students
in shipbuilding and aviation institutes as well as for students in mechanical-
mathematical and physical-mechanical departments of corresponding universities.

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Ch. X. Study of absolute trajectories with $=1$ and curved linear motion of

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point A -- 390

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SUB CODE: ME, NG

NO REF SOV: 018

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OTHER: 016

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L 9378-66 ENT(d)/FED/FSS-2/ENT(1)/FS(r)-3/EEC(k)-2/EWA(d)/T-2 IJP(c)
 ALC NR: AP5026928 GW/EC/WR SOURCE CODE: UR/0373/65/000/005/0047/0055

AUTHORS: Kan, V. I.; Kal'zon, A. S.

ORG: none

TITLE: Solution of a pursuit problem

SOURCE: AN SSSR. Investiya. Mekhanika, no. 5, 1965, 47-55

TOPIC TAGS: ship navigation, tracking system, spacecraft tracking, differential equation

ABSTRACT: It is desired to determine analytical expressions describing trajectories which a moving object (e.g., a ship) can follow in order to intercept another object moving with given uniform velocity. Using the method of proportional navigation (H. Spits. Partial navigation courses for a guided missile attacking a constant velocity target. Naval Research Laboratory, USA, 1946), the problem is solved for general values of the navigational constant b (i.e., $b \neq 2$). Solutions of the differential equations of motion are discussed with regard to questions of stability and whether or not interception is achieved for a given set of initial parameters. Exact solutions are obtained in a number of examples, and the effect of the velocity ratio p ($p = v/v^0$, where v^0 is the velocity of the uniformly moving object, and v the

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ACC NR: AP5026928

velocity of the pursuer) is investigated. The work is a continuation of previously published research of V. L. Kan and A. S. Kel'son, (Issledovaniye obshchey zadachi proporcional'nogo sblizheniya. Nauchn. tr. Ministerstva Morskogo flota SSSR, Incl.-vo "Morskoy transport", 1964, No. 1). Orig. art. has: 5 figures and 64 formulas.

SUB CODE: 17, 01/

SUBM DATE: 18Jan65/ ORIG REF: 005/

OTH REF: 002

Card 2/2

L 39604-66 BWT(d)/BWT(1)/ENP(m)/ENA(d) GW/CD

ACC NR: AP6002306

SOURCE CODE: UR/0141/65/008/006/1229/1243

AUTHOR: Kan, V. L.; Kel'zon, A. S.

ORG: none

TITLE: Qualitative investigation of the trajectory in proportional navigation

SOURCE: IVUZ. Radiofizika, v. 8, no. 6, 1965, 1229-1243

TOPIC TAGS: navigation, proportional navigation

ABSTRACT: Suggested by H. Spitz, the method of proportional navigation (Naval Res. Lab, USA Report, 1946) involves this set of equations for straight-line motion of point A:

$$\dot{\psi} = b \dot{\eta},$$

$$a = v_1 \cos \eta - v_2 \cos \gamma,$$

$$a \dot{\eta} = v_1 \sin \eta - v_2 \sin \gamma.$$

Here, a is the range (distance A-B), η is the angle of the line of sight, ψ is the angle of B velocity vector, γ is the lead angle, and b is the navigational constant; v_1 and v_2 are the velocities of points A and B, respectively. The problem is to find the relative trajectory of B assuming that both velocities are constant. The closed solution of the above set of equations can be represented by the roots of $f(\eta)$; however, such roots essentially depend on

Card 1/2

UDC: 531.1:656.6

KAN, V. I.

Cand Tech Sci

Dissertation: "Technology of Spinning
Synthetic Staple Fiber on Silk-Spinning
Equipment."

30/11/50

Moscow Textile Inst.

SC Vecheryaya Moskva
Sum 71

KAN, V. N.

Silk Manufacture

Method for selecting samples of silk noils. Tekst. prom. 12 No. 9, 1952.

Monthly List of Russian Accessions, Library of Congress, December 1952. Unclassified.

KAY, V. M., kandidat tekhnicheskikh nauk.

Redesign of the drawerhead on a roving machine for silk. Tekst.
prom. 16 no.8:48-50 Ag '56. (MLFA 9:10)

(Silk manufacture) (Spinning machinery)

KAN, V.M., kand. tekhn. nauk.

Using the ONR-TsNIKhBI device to test sliver evenness. Tekst. prom.
18 no.11:36 N '58. (MIRA 11:12)
(Carding) (Testing machines)

KAN, V.S., inzh.

Deriving the formula of the theoretic operative capacity of a gin
saw. Sbor.nauch.-issl.rab.TTI no.12:51-58 '61. (MIRA 15:11)
(Cotton gins and ginning--Equipment and supplies)

KAN, V.Ye.

Problems of builders in the development of a technical and material basis for farming. Prom.stroi. 42 no.7:2-4 '65.

(MIRA 18:8)

1. Chlen kollegii Gosstroya SSSR.

BESSER, Ya.R., inzhener; KAN, V.Ya., inzhener.

Evaluation of the various methods of concreting down-apron blocks.

Gidr.stroi. 23 no.8:4-9 '54.

(MLRA 8:1)

(Hydroelectric power stations) (Reinforced concrete construction)

C. A. N. M. Y. S.

Calculation of tanks for transport of low-boiling liquefied gases. Ya. S. Kan. *Astrolid* 4, No. 1/2, 88-4 (1917).
A method is suggested for calculating the optimum thickness of the lagging of tanks for transport of liquefied gases, ensuring adequate insulation without waste of space. The tank is assumed to possess a cylindrical shape with spherical ends, the ends being carried out separately for the cylindrical and the spherical parts. The thickness of the lagging should not exceed 40% of the outside radius of the container, and it may be possible to reduce it to 15%.

B. A.

Chern. Ak. KAN Ya. S.

1947

Some particularities of the transition into the superconducting state. I. A. A. Galkin, Ya. A. Kan, and B. G. Lazarev (Phys.-Tech. Inst., Acad. Sci. Ukr. S.S.R., Kiev). *Zhur. Eksp. Teor. Fiz.* 20, 865-70 (1950); cf. C.A. 43, 487g. On continuous lowering of the temp. at the uniform rate of $0.0016^\circ/\text{min.}$ in the vicinity of 8.7°K. , a 0.03-mm.-diam., nearly single-crystal wire of pure Sn, annealed at 100° , showed fluctuations of the elec. resistance, with, first, sharp variations by 20-30% and returns to the normal value, and later a fall by 60-70% which, on very slow cooling, is resolved into a series of fluctuations. The resistance then goes back to normal for a but these, and from then on the amplitude of the fluctuations decreases progressively. There are a few sharp peaks at 0.003° below the beginning of the fluctuations. A similar picture is obtained on heating. With a magnetic field applied parallel to the axis of the wire, the curve is step-shaped, with level portions instead of peaks. Only at a sufficiently high magnetic field strength is there a sharp fall from the normal into the superconducting state, occurring within a temp. interval as narrow as 0.000003° . In a magnetic field perpendicular to the axis of the wire, the peaks and the steps disappear, and the whole curve becomes saw-shaped. Similar curves are found, without magnetic field, with wires strained by drawing, and with an unannealed wire of Ta. The observed discontinuities of the change of the elec. resistance are not due to fluctuations of the temp., nor to statistical fluctuations of the temp. Transition into the superconducting state begins with the formation of thread-shaped nuclei of the superconducting phase, oriented parallel to the current and thus causing a marked fall of the elec. resistance. On further lowering of the temp., these threads evidently coagulate, giving rise to a particular transition state. The step-shaped curve in a longitudinal magnetic field is apparently due to supercooling. In a transverse magnetic field, the saw-shaped form of the

curve results from a superposition of a no. of sep. transitions taking place in small vol. of the sample. From the expl. curves, in the absence of a magnetic field, the rate of growth of the nuclei of the superconducting phase can be est. to a few mm./sec. II. A. A. Galkin, B. G. Lazarev, and P. A. Remizov (Phys.-Tech. Inst., Acad. Sci. Ukr. S.S.R., Kiev). *Ibid.* 1957-54; cf. C.A. 43, 4970a. The velocity v of the displacement of the boundary between the normal and the superconducting states was detd. in 2 independent ways. One method consisted in oscillography of the voltage E at the terminals of the secondary coil of a transformer with a superconducting core; the E induced in the coil depends both on the rate of change of the magnetic field H and on v . If the perturbation of the superconducting state begins at the periphery and v is a function of the radius r , then $E(t) = -(2eSH/c)[v + (v/r)r]$, where v = frequency, $v = dr/dt$, and S = cross-section area of the sample; v is thus obtained from the peak of the voltage obtained in the process of the perturbation. The detns. were made on samples of Hg and Sn 8-10 cm. long, 0.4-1.0 mm. in diam., enclosed in glass envelopes 0.03 mm. thick. Expts. showed that at the instant of the perturbation, E is several times as great as in the normal state; hence, $E(t)/E_0 = 1 + [v(r)/v_0] = 2$, and $v(r) > 2.5 \times 10^{-4} \times 10^4 \sim 10^4 \text{ cm./sec.}$ On the other hand, from the length of the impulse, on the assumption of complete disturbance in the transition process, $v = r/\Delta t = 5 \times 10^{-2}/2 \times 10^{-4} = 2.5 \times 10^4 \text{ cm./sec.}$ The depth of penetration δ of the disturbance of the supercond. is evidently smaller than the depth of penetration of the magnetic field into a metal in the normal state, owing probably to inhibition effects at the boundary between the 2 states. To est. δ , an a.c. of acoustic frequency was sent through a coil wound around a ring of Sn so as to create an addnl. magnetic field parallel to the current flowing along the surface of the ring. The max. induced current is $I_0 = H_0/2$, where H_0 = crit. magnetic field, r = radius of the superconducting cross-section of the sample; with the superconducting state disturbed to a depth δ , the current becomes $I = H_0(r - \delta)/2$, and hence I can be detd. from $I/I_0 = 1 - (\delta/r)$. The

(over)

e.g. some amt. of free FeO or MnO, the presence of impurities favoring decompos. of FeCr_2O_4 to $\text{FeO} + \text{Cr}_2\text{O}_3$, or to formation of solid solns. of C in Fe. The latter factor can, at the limit, raise ΔH by 5000 cal./mole, and consequently raise $\log p_{\text{CO}}$ by $\sim 1270/T$, sufficient to account for the discrepancies. (3) For the 2nd step, $\text{Cr}_2\text{O}_3 + 3\text{C} = 2\text{Cr} + 3\text{CO}$, $\Delta H^\circ = \Delta H^\circ - 5,309 T - 1.164 \times 10^{-3} T^2 - 5.463 \times 10^4 T^{-1}$. By crit. analysis of available data, the heat of formation of Cr_2O_3 at 298°K. is taken as $-268,000 \pm 600$ cal./mole. Hence, $\Delta H^\circ = 191,836$, and $\Delta F^\circ = 191,836 + 5,309 T \ln T + 1.164 \times 10^{-3} T^2 - 2.747 \times 10^4 T^{-1} - 100.53 T$, and $1/2 \log K_p \sim \log p_{\text{CO}} = -(13,977/10^4 T^{-1} - 100.53 T + 1.164 \times 10^{-3} T^2 - 2.747 \times 10^4 T^{-1} - 0.9 \log T - 0.0848 \times 10^{-1} T + 0.2 \times 10^4 T^{-1} + 12.35)$. The equil. pressure of CO should, consequently, be 1 atm. at 1500°K. Actually, under 1 atm., Cr_2O_3 is reduced at a lower temp., owing to formation of Cr carbides. (4) For the carbide formation $\text{Cr}_2\text{O}_3 (\text{solid}) + 11/2 \text{C} = 1/2 \text{Cr}_7\text{C}_3 (\text{solid}) + 3\text{CO} (\text{gas})$, $\Delta H^\circ = 176,370 - 0.693 T - 3.413 \times 10^{-3} T^2 - 3.87 \times 10^4 T^{-1}$, hence $\Delta F^\circ = 176,370 + 0.303 T \ln T + 3.413 \times 10^{-3} T^2 - 1.385 \times 10^4 T^{-1} - 138.42 T$, or $1/2 \log K_p \sim \log p_{\text{CO}} = (12,830/T) - 0.0897 \log T - 0.282 \times 10^{-1} T + 0.141 \times 10^4 T^{-1} + 10.1$. Exptl. detns., with pure Cr_2O_3 and pure graphite gave, at $T = 1183, 1223, 1253, 1303, 1323^\circ\text{K.}$, $p_{\text{CO}} = 0.028, 0.0568,$

0.0947, 0.2487, 0.3815 atm.; the product was identified as Cr_7C_3 by x-ray diffraction. The exptl. data lead to a section of the last term of the calcd. equation from 10.1 to 5.806. Equally applicable is the simpler empirical equation $\log p_{\text{CO}} = - (12,700/T) + 9.14$. (5) By the same procedure, there is found for the carbide formation: $\text{Cr}_2\text{O}_3 + 11/2 \text{Cr}_7\text{C}_3 = 11/2 \text{Cr}_7\text{C}_3 + 3\text{CO}$, $\log p_{\text{CO}} = (-14,225/T) - 3.87 \log T + 0.29 \times 10^{-3} T + 1.27 \times 10^4 T^{-1} + 21.68$; for $\text{Cr}_2\text{O}_3 + 11/2 \text{Cr}_7\text{C}_3 = 11/2 \text{Cr}_7\text{C}_3 + 3\text{CO}$, $\log p_{\text{CO}} = (-16,368/T) - 1.7 \log T + 0.018 \times 10^{-1} T + 0.170 \times 10^4 T^{-1} + 14.21$; and for $\text{Cr}_2\text{O}_3 + 3\text{Cr}_7\text{C}_3 = 14\text{Cr} + 3\text{CO}$, $\log p_{\text{CO}} = (-17,754/T) - 2.57 \log T + 0.42 \times 10^{-1} T + 0.238 \times 10^4 T^{-1} + 10.598$. The corresponding simplified two-term empirical equations for these 3 equilibria, obtained by graphic averaging, are, resp., $\log p_{\text{CO}} = (-13,236/T) + 8.818$; $(-15,454/T) + 8.22$; and $(-17,162/T) + 8.001$. (6) The reduction of Cr_2O_3 proceeds differently in the presence and in the absence of carbides. The highest p_{CO} corresponds to the carbide Cr_7C_3 , the lowest to Cr_7C_3 , with the p_{CO} for the reaction $\text{Cr}_2\text{O}_3 + 3\text{C} = 2\text{Cr} + 3\text{CO}$ lying in between.

USSR/Atomic and Molecular Physics - Low-Temperature Physics

D-5

Abs Jour : Ref Zhur - Fizika, No 1, 1958, 789

Author : Galkin, A.A., Kan, Ya.S., Lazarev, B.G.

Inst : Physical-Technical Institute, Academy of Sciences, Ukrainian, SSR.

Title : Discontinuous Attenuation of Current in a Superconducting Ring.

Orig Pub : Zh. eksperim. i teor. fiziki, 1957, 32, No 6, 1582

Abstract : An investigation was made of the character of the appearance of resistance in a superconducting lead ring carrying induced current under gradual heating. A measuring coil with 800 turns of copper wire was placed inside a ring of radius 1 cm made of wire 1 mm in diameter. Rotation of the coil about an axis located in the plane of the ring made it possible to measure the total current

Card 1/2

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S/181/62/004/003/037/045
B103/B104

AUTHORS: Kan, Ya. S., and Polyakov, L. M.

TITLE: Method of determining the tangential stresses in a medium under high pressure

PERIODICAL: Fizika tverdogo tela, v. 4, no. 3, 1962, 810-811

TEXT: A method of determining tangential stresses in a solid compressed by solids is described. It is based on determining these stresses for standard single crystals which at relatively low tangential stress show traces of residual deformation. From the stress - strain diagrams of the standards compressed under hydrostatic conditions one can then find the tangential stresses in any specific case by determining the difference between the hydrostatic traces and those obtained by compression between solids. By this method it is also possible to determine the solidification point of a liquid. There are 1 figure and 1 table. The English-language references are: J. T. Stevart. Phys. Rev., 97, 578, 1955; G. A. Swenson. Phys. Rev., 99, 423, 1955.

Card 1/2

Method of determining the tangential ...

S/181/62/004/003/037/045
B108/B104

ASSOCIATION: Fisiko-tekhnicheskiy institut AN USSR, Khar'kov (Physico-
technical Institute AS UkrSSR, Khar'kov)

SUBMITTED: November 30, 1961

Card 2/2

KAN, YA. S.

AUTHORS: Grigor'yev, V.N., Kan, Ya.S., Rudenko, N.S., 56-3-4/59
Safronov, B.G.

TITLE: Variation of Isotopic Composition of Evaporated Mercury.
(Izmeneniye izotopicheskogo sostava rtuti pri isparenii)

PERIODICAL: Zhurnal Eksperim. i Teoret. Fiziki, 1957, Vol. 33, Nr 3,
pp. 576-580 (USSR)

ABSTRACT: The variation of the isotopic ratio of the isotopes Hg-198 to Hg-204 was determined in the most different evaporation parameters (e.g. from 70 to 270° C) by means of the mass spectrometers MC-2 and MC-4. It was determined that a low evaporation velocity exercises a special influence on the evaporation kinetics.

The relative vapor pressure difference between the isotopes Hg-198 and Hg-204 can be given from the results:
for $t = -20^{\circ} \text{C}$ $\Delta p/p \leq 2 \cdot 10^{-3}$
for $t = 200^{\circ} \text{C}$ $\Delta p/p \leq 8 \cdot 10^{-4}$

There are 4 figures, 3 tables, and 4 Slavic references.

ASSOCIATION: Physical-Technical Institute AN of the Ukrainian SSR
(Fiziko-tekhnicheskii institut Akademii nauk Ukrainiskoy SSR)

SUBMITTED: March 13, 1957

AVAILABLE: Library of Congress

Card 1/1

L 2092-66 EWT(c)/EWP(1) IJP(c) BB/CG

ACCESSION NR: AP5023273

UR/0302/65/000/003/0033/0034
621.374.328:537.312.62

AUTHOR: Kan, Ya. S. ⁴¹ (Candidate of physico-mathematical sciences); Rakhubovskiy, V. A. ⁴¹

TITLE: Multiple-winding cryotron — a general-purpose logic element

SOURCE: Avtomatika i priborostroyeniye, no. 3, 1965, 33-34

TOPIC TAGS: cryogenic circuit, cryotron logic circuit, computer technology

ABSTRACT: If an extra bias winding is added to a cryotron with multiple windings, the element may perform logical operations. Depending on the relative direction and the magnitude of the control and bias currents, the modified cryotron may perform OR, EXCLUSIVE OR, AND, NOR, and NAND operations. The last two are the most practicable. A 4-bit adder using 3-winding lead-tin cryotrons was constructed and tested at the Physicotechnical Institute, Academy of Sciences UkrSSR. ^{165, 44} Adder speed was increased by a factor of two over the normal. The cryotrons used had time constants of 250 μ sec at an ambient temperature of 3.6K. The bias and control currents were 250 mamp \pm 20%. Orig. art. has: 3 figures. [BD]

ASSOCIATION: none

Cord 1/2

L 2092-66

ACCESSION NR: AP5023273

SUBMITTED: 00

ENCL: 00 .

SUB CODE: DP, EC

NO REF SOV: 000

OTHER: 000

ATD PRESS: 4113

Card 2/2

ARTEMENKO, I.A.; KAN, Ya.S.; RABUKHIN, L.B.

Static characteristics of cryotrons. Ukr. fiz. zhur. 10
no.9:1035-1036 S '65. (MIRA 18r9)

1. Institut kibernetiki AN UkrSSR, Kiyev, i Fiziko-tekhnicheskiy
institut AN UkrSSR, Khar'kov.

L 4966-66 EWT(1)/EWA(h)

ACC NR: AP5026972

SOURCE CODE: UR/0103/65/026/010/1884/1886

AUTHOR: Kan, Ya. S. (Khar'kov); Rakhubovskiy, V. A. (Khar'kov)

ORG: none

TITLE: The use of cryotron converters in studies of cryotron circuits ²⁵

SOURCE: Avtomatika i telemekhanika, v. 26, no. 10, 1965, 1884-1886

TOPIC TAGS: voltage converter, cryotron converter, cryotron circuit, switching time

ABSTRACT: A cryotron converter of constant low voltages of the order of 10^{-5} v into variable voltages of the order of 10^{-2} v is described. Basically, the converter consists of a cryotron oscillator and a cryotron connected in parallel to the input of the oscillator (see Fig. 1). The converter was used to determine both the static

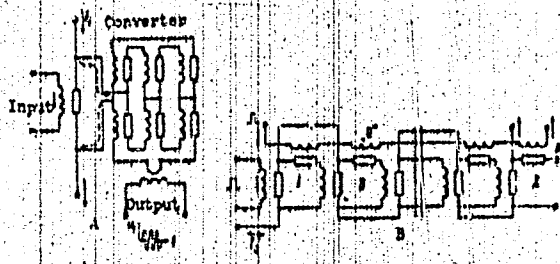


Fig. 1. Cryotron converter (A) and cryotron circuit (B)

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UDC: 621.374.328:537.312.62

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4966-516

ACC NR: AP5026972

time constant τ of an elementary cryotron cell and the switching time of some of the simplest cryotron circuits. The average switching time of a single cryotron cell for supply currents ranging from 230 to 330 mamp depended only slightly on current. For example, for a current of 280 mamp, average switching time was 100 usec. Thus, it was experimentally demonstrated that the static time constant τ of elementary cryotron cells for a wide range of currents can be used to determine the switching time of cryotron circuits. Orig. art. has: 4 figures. [JR]

SUB CODE: EC/ SUBM DATE: 18Sep64/ OTH REF: 003/ ATD PRESS: 4137

Card 2/2

L 21394-66 FMT(1)/EWA(h)
ACC NR: AP6007848 SOURCE CODE: UR/0120/66/000/001/0221/0222

AUTHOR: Kan, Ya. S.; Rakhubovskiy, V. A.

ORG: Physicotechnical Institute, AN UkrSSR, Kharkov (Fiziko-tekhnicheskii institut AN UkrSSR)

TITLE: Cryotron relaxation oscillator with frequency oscillator

SOURCE: Priory i tekhnika eksperimenta, no. 1, 1966, 221-222

TOPIC TAGS: cryogenic circuit, ammeter, relaxation oscillator

ABSTRACT: The relaxation oscillator shown in the figure is based on two-winding lead-tin cryotrons. The nominal output frequency of the oscillator is established by the gate current (terminals 7) and may be varied by the application of the control current (terminal 14). Since the control current flows through superconducting wires, the oscillator may be used as an ammeter for superconducting circuits. The current to be measured will change the output frequency of the oscillator by an amount linearly related to the magnitude of the control (measured) current. The cryotrons used in the circuit have $R = 10^{-4}$ ohm and $L = 10^{-8}$ h. The sensitivity of the circuit is

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UDC: 537.312.62:621.373.43

21394-66
AC NR AP6007848

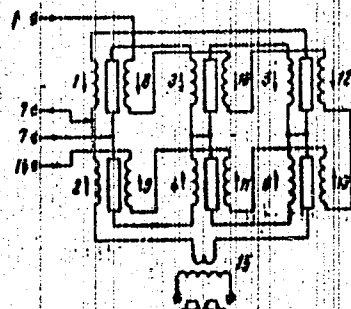


Fig. 1. Cryotron relaxation oscillator

given as 1 maup/cps in the range of 50 maup. Both the sensitivity and the range may be varied by changing the density of the control windings. Orig. art. has: 3 figures. [BD]

SUB CODE: 09/ SUBM DATE: 24Jan65/ OTH REF: 000/ ATD PRESS: 4221

Card 2/2 ULR

L 37926-66 ENT(d)/ENT(1)/ENT(m)/ENP(v)/ENP(t)/ETI/ENP(k)/ENP(h)/ENP(1) JD
 ACC NR: AP6022044 SOURCE CODE: UR/0120/66/000/003/0228/0229

AUTHOR: Kan, Ya. S.; Rakhubovskiy, V. A.

ORG: Physico-Technical Institute, AN UkrSSR. Khar'kov (Fiziko-tekhnicheskii institut AN UkrSSR)

TITLE: Cryotron relaxation oscillator as a thermometer

SOURCE: Pribery i tekhnika eksperimenta, no. 3, 1966, 228-229

TOPIC TAGS: thermometer, cryotron, relaxation oscillator

ABSTRACT: A possibility is demonstrated of using the cryotron relaxation oscillator as a liquid-He thermometer. As the frequency of a cryotron relaxation oscillator (such as described by M. L. Cohen et al., Proc. IRE, 1960, 9, 1575) operated at a constant current depends on the ambient temperature, the oscillator can serve as a low-temperature thermometer. The sensitivity of such a thermometer proved to be about 0.0003K/cps in the neighborhood of 3.5K. A formula is developed for calculating the liquid-He temperature from the observed frequency of the relaxation oscillator. Orig. art. has: 2 figures, 1 formula, and 1 table. [03]

SUB CODE: 20, 09 / SUBM DATE: 03Jun65 / ORIG REF: 000 / OTH REF: 001

Card 1/1

UDC: 621.374.328:537.312.62:536.5

L 44002-66 EWT(3)/EWT(1)/EWT(+)/EMP(R)/EMP(L)/EWP(1) 30

ACC NR: AP6029946

SOURCE CODE: UR/0413/66/000/015/0111/0111

INVENTOR: Artemenko, I. A.; Voytovich, I. D.; Kan, Ya. S.; Rakhubovskiy, V. A. 57
B

ORG: none

TITLE: A counter based on cryotrons. Class 42, No. 184525 [announced by the Institute of Cybernetics, AN SSSR (Institut kibernetiki AN SSSR); Physicotechnical Institute, AN SSSR (Fizikotekhnicheskiy institut AN SSSR)]

SOURCE: Izobret prom obraz tov zn, no. 15, 1966, 111

TOPIC TAGS: pulse counter, cryogenic circuit

ABSTRACT: A cryotron pulse counter¹⁴ consisting of a control, memory, starting, and an input circuit is described. The memory circuit (see Fig. 1) contains two cryotrons

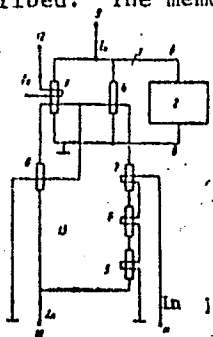


Fig. 1. A cryotron counter

1 - Memory circuit; 2 - cryotron generator; 3-8 - cryotrons; 9-12 - terminals; 13 - control circuit.

Card 1/2

UDC: 681.142.07

ACC NR: AP6029946

connected in parallel to the superconducting circuit containing the cryotron generator control coil and to the current source from the starter circuit. The control circuit has two parallel arms, each containing a control coil for the memory circuit cryotrons. One of these branches also includes a cryotron whose control coil is connected between a current source and the control circuit. The other branch consists of a group of cryotrons with a common control coil which serves as the counter input terminal. This arrangement achieves economy and assures that the counter is able to operate as an accumulator. Orig. art. has: 1 figure. [BD]

SUB CODE: 09/ SUBM DATE: 25Mar64/ ATD PRESS: 5070

Card 2/2 blg

ACC NR: AP7004264 (A) SOURCE CODE: UR/0432/66/000/003/0019/0023

AUTHOR: Kan, Ya. S. (Candidate of physico-mathematical sciences);
Mikhaylov, G. S. (Candidate of technical sciences); Rakhubovskiy, V. A.

ORG: none

TITLE: A model of a cryotron digital computer with programmed control

SOURCE: Mekhanizatsiya i avtomatizatsiya upravleniya, no. 3, 1966,
19-23

TOPIC TAGS: cryogenic computer, computer design

ABSTRACT: A small-scale model of a cryotron computer was built and tested at the Physico-technical Institute of the Academy of Sciences UkrSSR. The model contained only essential blocks such as the arithmetic unit, number memory unit, instruction memory with machine halt unit, control unit, and an I/O unit. The model could add, subtract, and multiply 4-bit (including sign bit) words in fixed-point notation. Instructions were of the three-address type, and the memory unit was random-access. The computer was built using 504 lead-tin wire cryotrons mounted on micarta cards. Three tests lasting 11, 17, and 21 hours were made during which every 3 hours the machine was stopped

Card 1/2

ACC NR: AP7006773

SOURCE CODE: UR/0102/66/000/006/0065/0069

AUTHOR: Voytovych, I. D. -- Voytovich, I. D. (Kiev-Khar'kov); ~~Kan, Ya. S. (Kiev-Khar'kov)~~; Rakhubovs'kyi, V. A. -- Rakhubovskiy, V. A. (Kiev-Khar'kov)

ORG: none

TITLE: Analysis of a cryotron memory circuit with many stable states

SOURCE: Avtomatyka, no. 6, 1966, 65-69

TOPIC TAGS: memory access technique, electromagnetic memory, digital system, digital analog converter, ~~cryotron circuit~~ *electronic circuit*

ABSTRACT: A cryotron memory cell which determines the number of pulses fed to its input by the value of the current persisting in it, was designed (see Fig. 1). In Fig. 1, K_1 and K_2 are working cryotrons; K_3 is the indicating cryotron; L_1 and L_2 are inductances of arms $abcd$ and $aefd$, respectively (it is set that $L_1 = L_2 = L$); L_3 is the inductance of arm $akld$; R_1 and R_2 are resistivities of cryotron tubes K_1 and K_2 in normal state (it is set that $R_1 = R_2 = R$). The transistivity processes were analyzed, and the dependence of the number of states from the mesh current $I_0^{(0)}$, when $\beta = 0.81$, $i_{cr}^{(1)} = 150$ ma, and $T = 3.6^\circ K$ was calculated and tabulated; here,

$$\beta = \frac{L_3}{L_3 + L}.$$

Card 1/2

ACC NR: AP7006773

The theoretical analysis of the cell's operation is in good agreement with the experimental data. One of the suggested applications is in a cryotronic pulse counter operating as a digital-to-analog converter (converting the number of input pulses into the resistivities of the cryotron tube X_3 , or its grid current). Orig. art. has: 5 formulas, 3 figures, 2 tables.

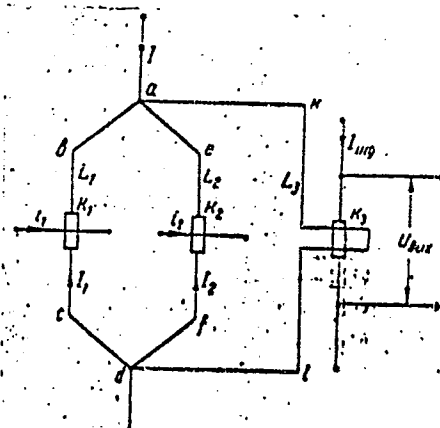


Fig. 1. Block diagram of the basic cryotron cell.

SUB CODE: 09/

SUBM DATE: 23Oct65/

ORIG REF: 001/

OTH REF: 002

Card 2/2

L 3910-66 ENT(1)

ACCESSION NR: AP5024134

UR/0185/65/010/009/1035/1036

AUTHOR: Artemenko, I. A.; Kan, Ya. S.; Rabukhin, L. B.

TITLE: Static characteristics of cryotrons

SOURCE: Ukrayins'kyi fizychnyy zhurnal, v. 10, no. 9, 1965, 1035-1036

TOPIC TAGS: cryotron, superconductivity

ABSTRACT: This note presents the results of the experimental determination of transfer characteristics of a thin unscreened cruciform cryotron shown in Fig. 1 of the Enclosure. Curve 1 is obtained following the usual potentiometric method during a constant 10^{-6} V voltage across the valve; curve 2 is obtained by the current method of small resistance measurements with a constant minimum resistance of $R_{\min} = (1.03 \pm 0.01) \cdot 10^{-9}$ ohm. Results show that the small slope of the characteristics for small valve currents is caused by the particular method of measurement only. The second method for the determination of characteristics is the more accurate one. Orig. art. has: 1 figure.

ASSOCIATION: Instytut kibernetiky AN URSSR, Kiev (Institute of Cybernetics, AN Ukr. SSR); Fizyko-tekhnichnyy instytut AN URSSR, Khar'kov (Physics-Engineering Institute, AN Ukr. SSR)

Card 1/3

L 3910-66

ACCESSION NR: AP5024134

SUBMITTED: 09Jun66

ENCL: 01

SUB CODE: EE, TF

NO REF SOV: 004

OTHER: 000

Card 2/3

L 3910-66

ACCESSION NR: AP5024134

ENCLOSURE: 01

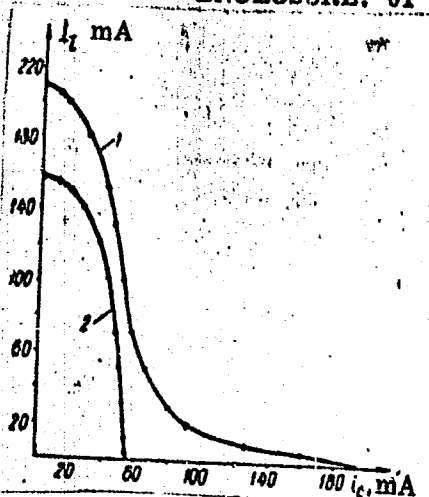


Figure 1. Valve current versus control grid current in a cryotron. Sn valve 2 mm wide, 5000 Å thick, control grid 0.15 mm wide, and 1000 Å thick, SiO insulation layer 7500 Å thick, critical temperature of the Sn membrane 3.8K; working temperature 3.69K.

Card 3/3

ALADATOV, G.M.; KAN, Yo.K.

New data on the geological structure, and oil and gas potentials
of the northern part of the Fergana Valley. Geol. nefti i gaza 3
no.5:19-22 My '59. (MIRA 12:7)

1. Krasnodarskiy filial Vsesoyuznogo neftegazovogo nauchno-issledovatel'-
skogo instituta i Neftepromyslovoye upravleniye Kirgizneft'.
(Fergana--Petroleum geology)
(Fergana--Gas, Natural--Geology)

KAN, Ye.K.

Results of gas prospecting in northern fergana (Kirghizistan).
Gaz.prom. 4 no.10:1-3 0 '59. (MIRA 13:2)
(Fergana--Gas, Natural--Geology)

SOKOLOV, I.P.; KAN, Ye.K.; ROZANOV, N.M.; SEMELEV, I.A.

Trends in further oil and gas prospecting in the Fergana Valley. Geol.nefti i gaza 3 no.12:13-16 D '59.
(MIRA 13:4)

1. Ferganskiy neftyanoy kombinat Kirgisneft' i Vsesoyuznyy nauchno-issledovatel'skiy geologo-razvedochnyy neftyanoy institut (VNIGNI).

(Fergana--Petroleum geology)

(Fergana--Gas, Natural--Geology)

VASIL'YEV, Yu.M.; GIBSHMAN, N.B.; KAN, Ye.K.; KOPEL'TSEV, A.A.;
LI, K.A.; CHARYGIN, M.M.

Initial results of super-deep drilling in the Caspian Lowland.

Trudy MINKHGP no.43:213-217 '63.

(MIRA 17:4)

ZLIZINA, A.G.; KAN, Ye.K.

Outlook for finding oil and gas pools in sediments overlying salt deposits in the Volga-Ural interfluve. Geol. nefti i gaza 7 no.6: 8-14 Je '63. (MIRA 16:9)

1. Trest Ural'skneftegazrazvedka i Kazakhskiy politekhnicheskii institut.

LI, K.A.; KAN, Y.K.; GORBACHEVA, V.P.; MILICHUK, B.A.

New data on the geological structure of the northern borderland
of the Caspian lowland and prospects of its gas and oil content.
Geol. nefte i gazu 9 no.1:16-18 Ja '65.

(MIRA 18:3)

KAN, Ye. L.

"Data Relating to the Study of the Influence of the Nervous System
on the Composition of the Blood." Cand Med Sci, Inst of Physiology,
Acad Sci USSR, Leningrad, 1953. (RZhBiol, No 1, Sep 54)

SO: Sum 432, 29 Mar 55

KAN, Ye.L.

Development of experimental anemia as a result of denervation
of the spleen. Biul.eksp.biol.i med. 37 no.3:29-33. Mr '54.
(MLRA 7:6)

1. Iz laboratorii fiziologii retseptorov (zav. chlen AN SSSR
V.N.Chernigovskiy) Insituta fiziologii imeni I.P.Pavlova AN
SSSR, Leningrad.

(ANEMIA, experimental,

*eff. of spleen denervation)

(SPLEEN, physiology,

*eff. of denervation on exper. anemia)

KAN, Ye.L.

Effect of stimulation of gastric mechanoreceptors on erythrocyte and leukocyte composition of the blood. Biul.eksp.biol. i med. 38 no.8:12-18 Ag '54. (MLRA 7:9)

1. Iz laboratorii fiziologii retseptorov (zav. deystvitel'nyy chlen AMN SSSR V.N.Chernigovskiy) Instituta fiziologii imeni I.P.Pavlova (dir. akademik K.M.Bykov) AMN SSSR, Leningrad.

(STOMACH, physiology,

eff. of stimulation, mechanical, on erythrocyte & leukocyte counts.

(ERYTHROCYTES,

count, eff. of mechanical stimulation of stomach)

(LEUKOCYTE COUNT,

eff. of mechanical stimulation of stomach)

KAN, Ye. L.

USSR/Human and Animal Physiology (Normal and Pathological).
Blood. Blood Diseases.

T-3

Abs Jour : Ref Zhur - Biol., No 16, 1958, 74690

Author : Kan, Ye.L., Vavilin, G.I.

Inst : ~~_____~~ *see p. 3*

Title : On the Mechanism of the Development of Experimental
Anemia Which Appears in Connection with Denervation of the
Spleen.

Orig Pub : Arkhiv patologii, 1957, 19, No 2, 61-68.

Abstract : In chronic tests on 18 cats, denervation (D) of the spleen
(S) was carried out. In all cases, expressed hypochromic
normocytotic anemia developed, lasting 1½-7 months. In 14
cats, the most expressed anemia was noted on the 5-24th
day. Anemia was caused by strong hemolysis, since after
D the content of bilirubin in the serum and hemosiderin in
the S, bone marrow (BM), liver and kidneys did not change.
In 50% of the cats anemia proceeded with peripheral

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- 42 -

USSR/Human and Animal Physiology (Normal and Pathological).
Blood. Blood Diseases.

T-3

Abs Jour : Ref Zhur - Biol., No 16, 1958, 74690

peripheral blood. The number of leukocytes after D increased by 32-299%, and in one case by 488% (58,700 per 1 mm³). In 21 tests on 5 cats with fistula of the stomach and denervated S, the walls of the stomach were stimulated by inflation with a rubber balloon. D was conducted in single animals resulting in the increase of the number of E, in others to the decrease, and in some to the decrease of the number of E following their temporary increase. Also insignificant fluctuations of the number of E were observed, resembling "spontaneous ones" in intact animals. D of S has little bearing on the reactivity of white blood. -- A.D. Beloborodova.

1. Iz gruppy deystvitel'nogo chlena AMN SSSR prof. M. D. Tushinskogo i iz laboratorii eksperimental'noy patologii (zav.-starshiy nauchnyy sotrudnik G. S. Kan) Leninsradskogo instituta tuberkuleza (dir.-prof. A. D. Semenov, nauchnyy konsul'tant - chlen-korrespondent AN SSSR prof. V. N. Chernigovskiy)

Card 3/3

- 43 -

KAN, Ye. L.

TUSHINSKIY, M.D., STAVSKAYA, V.V., YAROSHEVSKIY, A.Ya., DAVIDENKOVA, Ye.F.,
SKARLATO, Ye.S., KAN, Ye.L., SKRAYABINA, Ye.A. (Leningrad)

Clinical aspects of the pandemic of influenza in 1957. Klin.med.
36 no.5:43-48 My '58 (MIRA 11:7)
(INFLUENZA, epidemiology
in Russia, pandemic (Rus))

KAN, Ye.L.

Hemopoietic properties of the serum of healthy and anemic animals.
Biul. eksp. biol. i med. 49 no.2:55-61 F '60. (MIRA 14:5)

1. Iz gruppy deystvitel'skogo chlena AMN SSSR M.D. Tushinskogo i
laboratorii eksperimental'noy patologii i terapii (zav. G.S. Kan)
Leningradskogo instituta tuberkuleza (dir. - prof. A.D. Semenov.
Predstavlena deystvitel'nyy chlenom AMN SSSR M.D. Tushinskim.
(ANEMIA) (HEMOPOIETIC SYSTEM)

TUSHINSKIY, M.D.; STAVSKAYA, V.V.; BOGORODSKAYA, T.A.; MAN, Ye.L.;
LERMONTOV, V.V. (Leningrad)

Some clinical and diagnostic problems in influenza. Klin.med.
no.12:54-60 '61. (MIRA 15:9)

1. Iz kafedry propedevticheskoy terapii (zav. - prof. M.D.
Tushinskiy) i Leningradskogo meditsinskogo instituta imeni
I.P. Pavlova.

(INFLUENZA)

KAN, G.S., starshiy nauchnyy sotrudnik; KAN, Ye.L., starshiy nauchnyy
sotrudnik; POLETAYEVA, K.A., mladshiy nauchnyy sotrudnik

Experimental tuberculosis of the spleen and its interrelation with
the nervous system. K izuch. roli nerv. sist. v pat., immun. i lech.
tub. no. 2:46-62 '61. (MIRA 15:10)

1. Iz laboratorii eksperimental'noy patologii i terapii (zav. -
G.S. Kan) Leningradskogo nauchno-issledovatel'skogo instituta
tuberkuleza (dir. - prof. A.D. Semenov) i gruppy deystvitel'nogo
chlena AMN SSSR prof. M.D. Tushinskogo.
(SPLEEN--TUBERCULOSIS) (NERVOUS SYSTEM)

KAN, Ye.L., starshiy nauchnyy sotrudnik

Effect of deafferentation of the extremity on the blood system
and the development of a focus of specific inflammation in the
skin of dogs. K izuch. roli nerv. sist. v pat., immun. i lech. tub.
no. 2:212-218 '61. (MIRA 15:10)

1. Iz gruppy deystvitel'nogo chlena AMN SSSR prof. M.D. Tushinskogo i
laboratorii eksperimental'noy patologii i terapii (zav. - G.S. Kan)
Leningradskogo nauchno-issledovatel'skogo instituta tuberkuleza.
(SKIN--TUBERCULOSIS) (EXTREMITIES (ANATOMY--INNERVATION)
(HEMOPOIETIC SYSTEM)

KAN, Ye.L., starshiy nauchnyy sotrudnik; SHKOL'NIKOVA, M.D., starshiy
nauchnyy sotrudnik

Study of the changes in the blood system during the formation of
antituberculosis immunity and following superinfection. K izuch.
roli nerv.sist.v pat., immun.i lech.tub. no.2:271-280 '61.

(MIRA 15:10)

1. Iz laboratorii eksperimental'noy patologii i terapii (zav. -
G.S.Kan) Leningradskogo nauchno-issledovatel'skogo instituta
tuberkuleza.

(IMMUNOHEMATOLOGY) (TUBERCULOSIS)

KAN, Ye.L.

Physiological mechanisms of immunity to tuberculosis. Report No. 1:
The effect of antituberculosis vaccination of leucocytic reactions
provoked by the paranteral administration of milk. Biul. eksp.
biol.i med. 54 no.11:80-83 N '62. (MIRA 15:12)

1. Iz laboratorii eksperimental'noy patologii i terapii (zav.
G.S.Kan) Leningradskogo nauchno-issledovatel'skogo instituta
tuberkuleza (dir. - prof. A.D.Semenov) Predstavlena akademikom
V.N.Chernigovskim.

(TUBERCULOSIS--PREVENTIV INOCULATION) (LEUCOCYTES)

KAN, Ye.L.

Complement fixation reaction in BCG-vaccinated rabbits. Biul. eksp.
biol. i med. 57 no.5:59-62 My '64. (MIRA 18:2)

1. Laboratoriya eksperimental'noy patologii i terapii (zav. G.S.
Kan) Leningradskogo nauchno-issledovatel'skogo instituta tuber-
kuleza (dir. - prof. A.D.Semenov). Submitted February 4, 1963.

KAN, G.S.; KAN, Ye.L.

Effect of antituberculous vaccination on post-transfusion shock.
Biul. eksp. biol. i med. 57 no.6:64-69 Je '64.

(MIRA 18:4)

1. Laboratoriya eksperimental'noy patologii i terapii (zav. - G.S. Kan) Leningradskogo nauchno-issledovatel'skogo instituta tuberkuleza (dir. - prof. A.D.Semenov).

SOV/130-58-6-7/20

AUTHORS: Ful'makht, V.V., Kan, Ye.M. and Chumichev, A.G., Engineers

TITLE: The Largest Installation in the World for the Continuous Casting of Steel (Samaya krupnaya v mire ustanovka nepreryvnoy razlivki stali)

PERIODICAL: Metallurg, 1958, Nr 6, pp 15 - 17 (USSR)

ABSTRACT: The authors describe a four-machine, continuous-casting installation designed jointly by the Giprostal' and the Tsentral'nyy nauchno issledovatel'skiy institut chernoy metallurgii (Central Research Institute for Ferrous Metallurgy). This installation is being built in the melting shop of the Stalino Metallurgical Works for casting four billets or slabs simultaneously of carbon and low-alloy steels from 140-ton ladles. Thickness and width ranges are 120-250 and 600-1200 mm, respectively and casting speed is 0.6-1.2 m/min. All units are in a 25-m dia. reinforced concrete-faced pit with its bottom 24 m below floor level; the pouring platform is 3 m above it. The platform has four 14-ton tundishes, two of which are in reserve. The tundishes can be quickly moved with the aid of rotary and lifting tables. The four moulds are of the independent-wall construction and each wall consists of an inner copper and an outer cast-iron plate with channels for cooling water between them; the mould for a particular size of billet

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SOV/130-58-6-7/20
The Largest Installation in the World for the Continuous Casting of Steel

is assembled in a special holder. There is a special device for lubricating the inner walls when pouring starts. The casting is started with the aid of three-part primer, 13.8 m long, with a swallow-tail top which forms a bottom for the mould. The primer is lowered by the machine roller system and is split into its component parts and stored. Each directing roller-section, with a total length of 10.5 m, consists of an upper and a lower part, the rollers being 140 x 1 200 mm. The billet is spray-cooled as it passes down the section and then enters the drawing stand provided with hollow, water-cooler rollers. Under each drawing stand is a flame-cutting installation which cuts the billet into lengths of 4.2 - 5.2 m. The cutting system descends at the casting speed and can be raised at 0.3 m/sec. The cut billets are raised by 16-ton lifts (one for each pair of machines) to the floor level. Instrumentation is provided on panels at the pouring and intermediate levels, television is available for remote observation and a loudspeaker system for intercommunication. A model of the installation is on exhibition at the Brussels fair. An annual saving of 9.4

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SOV/130-58-6-7/20

The Largest Installation in the World for the Continuous Casting of Steel

million roubles is expected from the use of the continuous instead of ordinary methods of casting.

There are two figures.

ASSOCIATION: Tsentral'nyy nauchno-issledovatel'skiy institut
chernoy metallurgii (Central Research Institute for
Ferrous Metallurgy)

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1. Steel - Casting 2. Industrial plants - Equipment

SOV/133-58-11-6/25

AUTHORS: Boychenko, M.S., Candidate of Technical Sciences,
Gavrilov, O.T., Kan, Yu.B. and Kononov, B.Z., Engineers

TITLE: Semi-continuous Casting of Stainless Steel (Polunepre-
yvnaya razlivka nerzhavayushchey stali)

PERIODICAL: Stal', 1958, Nr 11, pp 983 - 987 (USSR)

ABSTRACT: Semi-continuous casting of steel 1Kh18N9T into slabs
175 x 300 mm for the production of cold-rolled sheets
is described. Steel is smelted in a 20-ton basic electric
furnace and after casting eight 4-ton ingots the remaining
steel is poured into an intermediate capacity preheated
to 1 100 - 1 200 °C of the semi-continuous casting
machine. From the intermediate capacity the metal is
passed into a crystalliser (mould) through a 90° bend
passage with a velocity of 1 100 - 1 200 mm/min and is
cast into slabs 4 500 mm long, weighing 1 700 kg. The
initially used and subsequently modified casting equip-
ment is shown in Figures 1 and 2, respectively. The
main difficulty in obtaining quality sheets was the
formation of skin on the surface of the metal in the
crystalliser and its subsequent passage into the ingot.
To prevent this, a wooden plank is placed on the level
of the metal of a somewhat smaller cross-section than

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Semi-continuous Casting of Stainless Steel

SOV/133-58-11-6/25

that of the slab. In the centre of the plank, an opening for the passage of the stream of metal is made. Such planks protect the surface of the metal from oxidation, decrease heat losses and form a good lubrication of the walls of the crystalliser during casting, as they evolve volatiles condensing on the walls. The above considerably decreased the formation of skin. Cast slabs are weighed and cut into measured lengths using an aluminium-magnesium powder (the width of the cut 8-12 mm). From the head part about 250 mm (about 5.5% of the length) is cut off in order to remove shrinkage cavity (Figure 3). The surface of the slabs is planed to a depth of about 5 mm. The macrostructure of the cast slab is shown in Figure 4. Two main forms of non-metallic inclusions were observed: a) titanium nitrides, situated in groups in the underskin layer, in the axial zone at a distance of $1/4$ of the slab thickness (Figure 5a); b) very fine inclusions in the form of thin, broken chains which are probably carbo-nitrides (Figure 5b). The microstructure of the metal was dendritic, more coarse in the middle than at the surface of the slab (Figure 6). Mechanical properties and

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Semi-continuous Casting of Stainless Steel SOV/133-58-11-6/25

resistance to inter-crystalline corrosion of cold-rolled sheets from ordinary and semi-continuously cast ingots was approximately the same and corresponded to requirements of TU 3126-52. The surface quality of the sheets from the above two kinds of ingots was the same. The process of crystallisation of semi-continuously cast slabs was investigated using radioactive phosphorus. Samples of radioactive phosphorus mixed with powdered iron and enclosed in a copper tube (about 100 mm long) were fixed to a steel rod which was introduced into the slab immediately after the end of casting (casting velocity 1 000 mm/min). The results of the investigation (shown in Figure 7) indicated that permissible linear velocity of casting is within a range of 1 100 - 1 200 mm/min. During the development of the practice, altogether 130 tons of the steel were cast in this manner with a coefficient of utilisation of metal of 1.96 instead of 2.11 when producing cold-rolled sheets from ingots. There are 7 figures and 2 Soviet references.

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Semi-continuous Casting of Stainless Steel

SOV/133-58-11-6/25

ASSOCIATIONS: TsNIICHM and Zavod "Krasnyy Oktyabr'"
("Krasnyy Oktyabr'" Works)

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8/133/60/000/009/011/015
A054/A029

AUTHORS: Kan, Yu.Ye., Matevosyan, Ye. P., Kononov, B.Z.

TITLE: Comparing the Quality of 1X18H9T (1Kh18N9T) Ingots Produced by the Semi-Continuous and by the Conventional Methods

PERIODICAL: Stal', 1960, No. 9, pp. 846-849

TEXT: From the ingots produced according to the conventional methods in a basic arc furnace a longitudinal template was made, while from the ingots produced according to the "semi-continuous" method longitudinal and transverse templates were made in various arrangements. As to the macrostructure, no basic difference was found between the two kinds of specimens, in the "semi-continuous" specimens, however, an external approximately 7 mm thick case was observed; furthermore, the crystallites in these specimens had a somewhat smaller cross-section in the transcrystallization zone. The microstructural tests confirmed the assumption of several authors (Ref. 2) that the quantity of α -phase decreases as the crystallization rate increases. In the border-zone of the "semi-continuous" ingots the inclusions of the α -phase are smaller and are more evenly distributed over the basic austenite structure than in the conventional ingots. Chemical ana-

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S/133/61/000/004/002/015
A054/A127

18.3200

AUTHORS: Rutes, V. S., Candidate of Technical Sciences; Katomin, B. N., Engineer; Kan, Yu. Ye., Engineer; Petrov, V. K., Engineer, and Lobanov, V. V., Engineer

TITLE: Adopting the process of the continuous casting of carbon steel at the Novo-Lipetsk metallurgicheskiy zavod (Novo-Lipetsk Metallurgical Plant)

PERIODICAL: Stal', no. 4, 1961, 311 - 317

TEXT: Two units for continuous casting of carbon steel have been in operation in the Novo-Lipetsk Metallurgical Plant since 1959 and 1960, respectively. The units used for casting 150 x 620, 150 x 770 and 170 x 1020 mm slabs are arranged vertically (TsNIIChM-design), the pits are 16.5 m deep, while the 90-ton ladle is mounted 9 m above the workshop floor. Metal is poured into the crystallizer via a 5 - 7-ton intermittent ladle. The unit consists of two independent machines, each containing a crystallizer, secondary system, pulling stands, gas cutters, discharge devices (Fig. 1). The intermittent ladle is provided with spouts, (28 - 30 mm in diameter),

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Adopting the process of the continuous casting... A054/A127

in accordance with the composition of the steel. The crystallizer consists of double-sheet walls, 1.5 m long, the inner sheet is made of chromium-bronze (5pXp0.6 = BrKhr0.6), the outer of steel. Cooling water is supplied at a rate of 150 - 250 cu m/h to flow between the sheets. The crystallizer reciprocates vertically over 20 mm (downward) by means of a roller-system, synchronously with the slab, while its upward motion is 3-times faster than that of the slab. The inoculator (9 m long) has a special groove on its upper part (in the crystallizer), ensuring strong bond with the slab. The cooling device, 6.5 m long, is provided with frames, connected with 120-mm diameter rolls. The frames can be adjusted to the slab size. The cooling area is divided into 3 zones, the water flow can be independently controlled on each side and for each zone. Water consumption as a function of slab section-size and type of metal varies between 30 and 75 cu m/h. The slabs are removed from the crystallizer by pulling equipment consisting of four 300-mm diameter guiding beams, which are pressed to the slabs by means of a hydraulic system (40 - 60 atmospheres). Immediately after discharging the slabs are cut to pieces 6 - 8 m long, by 2 oxy-acetylene cutters with 3-m stroke. The equipment is completed with a roll-over machine and conveying

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Adopting the process of the continuous casting... A054/A127

facilities. As this was the first continuous casting machine of such large size, literature gave no indications as to its operation. In the beginning 150 x 620 mm slabs were cast and in the first month not one out of 12 ladles could be poured completely, while in the second month out of 18 ladles 6 could be poured. Operation had to be interrupted mostly due to the troubles with the intermittent ladle, some other parts of the equipment and the deformation of slabs observed under the discharge device. This drawback could be eliminated by improving secondary cooling conditions. Also the faulty operation of the spouts, rupture of the plugs could be eliminated. A frequent cause of trouble was the tendency of the metal to break through under the crystallizer, mainly by the slag inclusions which are difficult to remove from the narrow side of slabs. The crystallizer operation was often affected by water-leakage through the sheets, due to their burning out. The greater the slabs, the simpler and easier the casting process. Since November 1959, 170 x 1020 mm slabs have been produced from killed carbon steel. The amount of faulty castings was reduced from 30.4% to 2.9% in 8 months. The temperature of the liquid metal in the 90-ton ladle was tested in the 1580° - 1640°C range. The optimum temperatures are 1600° - 1630°C. Below 1600°C there is the risk of the metal clogging the spouts of the inter-

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Adopting the process of the continuous casting...

mittent ladle, whereas above 1630°C rupture of the metal under the crystallizer and longitudinal fractures on the broad sides of the slab can be expected. The optimum pouring speed for 150 x 620 mm (A) slabs was 0.85 - 0.90 m/min, for 150 x 770 mm (B) slabs: 0.75 - 0.80 m/min and for 170 x 1020 mm (C) slabs: 0.50 - 0.60 m/min. The metal consumption - in the same sequence - was: A: 550 - 610 kg/min, B: 690 - 740 and C: 700 - 850 kg/min. When pouring under the lowest rate, the spouts of the intermittent ladle tend to get clogged and due to the longer pouring time, the operation of the ladle-stoppers was affected. An increase of the pouring rate above the maximum (0.90 m/min) may result in rupture of the metal under the crystallizer. For cooling water consumption (in the crystallizer) the following values were found (in cu m/h): slabs A: 150 - 200; slabs B: 195 - 210; slabs C: 225 - 250. Water consumption for secondary cooling, (in cu m/h): slabs A: 31 - 34, slabs B: 37.5 - 41, slabs C: 44 - 52. Heat dissipation, (10⁶ cal/h): slabs A: 1.7; slabs B: 1.9; slabs C: 2.0. In the early operation of the equipment waste was considerable: in November 1959 26.4%. The main defects are longitudinal cracks, leaks, beads, slag inclusions, etc. Longitudinal surface cracks appeared frequently which could be prevented by pouring the

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metal into the crystallizer excentrically, at 250 mm from the thin wall of the crystallizer and by applying the optimum sulfur and carbon content of the metal. At a carbon content of 0.14% and a sulfur content below 0.029% no cracks formed; at 0.17% carbon content the allowed sulfur content is 0.020%. The other types of defects could be eliminated by improving the operation of the intermittent ladle, stoppers, etc. Bead formation was prevented by maintaining the required level of the metal in the crystallizer; by reducing the coating of the intermittent ladle and improving the removal of slag the amount of slag inclusions were reduced. In March 1960, the rate of flawless 170 x 1020 mm slabs from killed carbon steel was as high as 94 - 96%, the maximum waste: 1.9%. The slabs were rolled into 2.5 - 3.0 mm and 10 - 25 mm sheets and it was found that sheets of cast slabs have the same plasticity and surface-quality as those made of rolled slabs. Mechanical properties, microstructure and macrostructure of the cast slabs meet the standard requirements. There are 4 figures and 2 tables.

ASSOCIATION: TsNIICHM and Novo-Lipetskiy metallurgicheskiy zavod (Novo-Lipetsk Metallurgical Plant)

Card 5/85

22313

Z/034/60/000/08/002/030
E073/E335

AUTHOR: Káňa, Engineer

TITLE: Possibilities of Increasing the Rate of Production of
Blooming Mills from the Point of View of the Mechanical
Equipment

PERIODICAL: Hutnické listy, 1960, Nr 8, pp 596 - 597

ABSTRACT: This paper was presented at a Conference on Rolling, held
on March 9-10, 1960, in Prague.

By calculation and actual measurements at the NHKG Works
it was proved that a considerably higher performance can
be achieved with existing equipment than is being achieved
at present. For this purpose it is necessary to eliminate
the existing bottlenecks in the soaking pits and to increase
the power of the driving motors. Whilst in the USSR and
USA increasing use is being made of pulling ingot trolleys
by ropes, this has so far not been applied in Czechoslovakia
for fear of high rates of rope failure and the necessity
of stretching the ropes due to the considerable length
involved, which is about 270 m at NHKG. Various measures
are recommended, namely, modifications in the design of
the rolling stands (substituting AC drives of the rollers

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Z/034/60/000/08/002/030

E073/E335

Possibilities of Increasing the Rate of Production of Blooming Mills
from the Point of View of the Mechanical Equipment

by individual DC drives), the manipulators, the shears
(including the removal of the waste material cut off by
the shears), substitution of mesh filters used at present
by lamella filters, as was done in the blooming mill of
VZKG, which was supplied to Russia. Furthermore, bearings
from synthetic materials should be substituted by anti-
friction bearings.

ASSOCIATION: Hutní projekt, Ostrava (Metallurgical-project
Office, Ostrava)

Card 2/2

KANA, B.

Business accounting used by a complex group of workers in housing construction, p. 324, POZEMNI STAVBY, (Ministerstvo stavebnictvi) Praha, Vol. 3, No. 8, Aug. 1955

SOURCE: East European Accessions List (EEAL) Library of Congress, Vol. 4, No. 12, December 1956

MEDRICKY, Z., inz.; KANA, J., inz.

Thermal conditions of coking-oven batteries. Paliva 41
no.1:14-19 Ja '61.

1. Nova hut Klementa Gottwalda, koksovna.

KANA, R.

KANA, R. Using continual building methods carried out by complex (cyclic) workers' unit in Slovakia. p. 258.

Vol. 4, no. 7, July 1956
POZEMNI STAVBY
TECHNOLOGY
Praha, Czechoslovakia

So: East European Accession Vol. 6, no. 2, 1957

KANA, R.

Use of assembly-line method of building in Slovakia. p. 72.
POZEMNI STAVBY. (Ministerstvo stavebnictvi) Praha. Vol. 3,
no. 2, February 1955.

SOURCE: East European Accessions List (EEAL), Library of Congress,
Vol. 4, No. 12, December 1956.

Kana, R.

Kana, R. The manufacture and conveyance of mortar in constructing a housing development in Prievidza. p. 83.

Vol. 5, no. 2, Feb. 1957.

POZEMNI STAVBY

TECHNOLOGY

Czechoslovakia

So. East European Accessions, Vol. 6, No. 5, May 1957

KANA, T.

Electric power in industrial enterprises. p. 617.

TECHNICKA PRACA. (Rada vedeckych technickych spolocnosti pri Slovenskej akademii vied) Bratislava, Czechoslovakia. Vol. 11, no. 8, Aug. 1959.

Monthly list of East European Accessions (EEAI), IC, Vol. 8, no. 10, Oct. 1959. Uncl.

KANA, Tomas, inz.

For saving of fuel and power in industries. Energetika Cz 11 no.11:
562 N '61.

(Fuel) (Power resources)